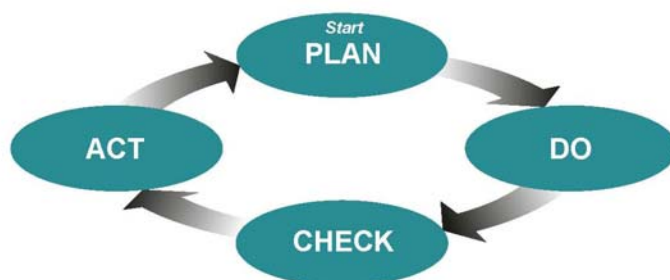


# Environmental Management System Plan



Prepared by:  
Environment, Health, and Safety Division  
Environmental Services Group

May 2012

Revision 5



**Lawrence Berkeley  
National Laboratory**

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Berkeley, CA 94720

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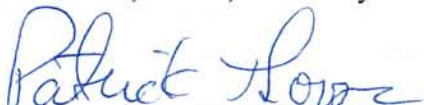
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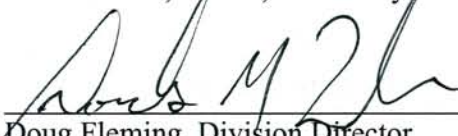
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# Table of Contents

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Disclaimer .....	i
Review and Approval .....	ii
Record of Revisions .....	iv
Acronyms .....	v
1.0 EXECUTIVE SUMMARY .....	1-1
2.0 INTRODUCTION .....	2-1
2.1 Requirements .....	2-1
2.2 Performance-Based Approach .....	2-3
2.3 Goals .....	2-5
2.4 Integration of EMS with ISMS .....	2-5
3.0 PROGRAM ELEMENTS .....	3-1
3.1 General Requirements .....	3-1
3.2 Environmental Policy .....	3-2
3.3 Environmental Aspects .....	3-3
3.4 Legal and Other Requirements .....	3-4
3.5 Objects, Targets, and Environmental Management Programs .....	3-5
3.6 Structure and Responsibility .....	3-6
3.7 Training, Awareness, and Competence .....	3-7
3.8 Communication .....	3-8
3.9 Documentation .....	3-9
3.10 Document Control .....	3-10
3.11 Operational Control .....	3-10
3.12 Emergency Preparedness and Response .....	3-10
3.13 Monitoring and Measurement .....	3-11
3.14 Evaluation of Compliance .....	3-12
3.15 Nonconformance, Corrective Action, and Preventive Action .....	3-12
3.16 Records .....	3-13
3.17 Audits and Appraisals .....	3-14
3.18 Management Review .....	3-15
4.0 REFERENCES .....	4-1
ATTACHMENT A .....	A-1

# Record of Revisions

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Revision #	Description	Section(s)	Date of Revision
Rev. 0	Original	All	September 2004
Rev. 1	Expanded sign-off; minor reorganization of layout; added implementing procedures and environmental management programs as appendices	Appendices A & B	March 2005
Rev. 2	Minor revisions	All	August 2005
Rev. 3	Core Team adjustments; expanded program elements from 6 to 17 to account for all ISO 14001 elements	3	July 2008
Rev. 4	Incorporate requirements of DOE Orders 430.2B and 450.1A; expanded elements from 17 to 18	All	March 2009
Rev. 5	Update to reflect approval of DOE O 436.1 (which cancelled of Orders 430.2B and 450.1A) and signing of Executive Order 13514; changed RPM to Requirements and Policies Manual; delete compliance-based section (former 2.2)	All	May 2012

# Acronyms

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C	Control/Maintain (EMP classification)
CATS	Corrective Action Tracking System
DOE	Department of Energy
EHS	Environment, Health & Safety (the organizational division)
ES&H	Environment, Safety & Health (the discipline)
ESG	Environmental Services Group
EMP	Environmental Management Program
EMS	Environmental Management System
FY	Fiscal Year
I	Improve (EMP classification)
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
LBNL	Lawrence Berkeley National Laboratory
OCA	Office of Contractor Assurance
OIA	Office of Institutional Assurance
OQMP	Operating and Quality Management Plan
PEMP	Performance Evaluation and Measurement Plan
S	Study/Investigate (EMP classification)
SER	Site Environmental Report
SSP	Site Sustainability Plan
SSPP	DOE's Strategic Sustainability Performance Plan

# 1.0

## Executive Summary

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Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*<sup>1</sup> established the policy that Federal agencies conduct their environmental, transportation, and energy-related activities in a manner that is environmentally, economically and fiscally sound, integrated, continually improving, efficient, and sustainable. Subsequently, EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*<sup>2</sup>, expanded on this policy to require Federal agencies to lead by example in creating a clean energy economy that will promote energy security, safeguard the environment, and increase the Nation's prosperity. EO 13514 also expanded the scope of sustainability efforts and extended the target dates for existing goals under EO 13423 and new goals established by this Executive Order. The major addition from this action was the new requirement to measure, report, and reduce greenhouse gas emissions.

With the signing of the second Executive Order, the Department of Energy (DOE) consolidated a pair of its directives, DOE O 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*<sup>3</sup> and DOE Order 450.1A, *Environmental Protection Program*<sup>4</sup> into DOE O 436.1, *Departmental Sustainability*<sup>5</sup>, to manage sustainability activities within the Department. The purpose of the new directive is to:

- ensure DOE carries out its missions in a sustainable manner that addresses national energy security and global environmental challenges, and advances sustainable, efficient and reliable energy for the future,
- institute wholesale cultural change to factor sustainability and greenhouse gas reductions into all DOE corporate management decisions, and
- ensure DOE achieves the sustainability goals established in the annual DOE *Strategic Sustainability Performance Plan*<sup>6</sup> pursuant to applicable laws, regulations and Executive Orders, related performance scorecards, and sustainability initiatives.

The directive's objectives flow down from DOE O 436.1 to Lawrence Berkeley National Laboratory (LBNL, Berkeley Lab, or the Laboratory) through a contract requirement that the Laboratory have an environmental management system (EMS) in place that is either certified to or conforms with the International Organization of Standardization's (ISO) 14001:2004(E)<sup>7</sup>.

Achieving the sustainability goals identified by DOE is accomplished in part by a continuation of the sustainability requirements from the previous directives, such as the provisions of the Energy Policy Act of 2005<sup>8</sup> and Energy Independence and Security Act of 2007<sup>9</sup>. The platform for identifying contributions LBNL makes toward these goals is an annual site sustainability plan. At the time of this revision to the EMS plan, the *FY2012 LBNL Site Sustainability Plan*<sup>10</sup> represented the most current plan prepared by

Berkeley Lab. The Laboratory's EMS represents the tool that tracks progress towards the site's objectives and measurable targets for aspects such as:

- Electronics stewardship
- Energy conservation, energy efficiency, and renewable energy
- Greenhouse gas emissions
- Pollution prevention, with emphasis on toxic and hazardous chemical and material reduction
- Procurement of efficient energy and water consuming materials and equipment
- Recycling and reuse
- Sustainable acquisition of products and materials
- Sustainable and high-performance building design
- Transportation and fleet management
- Water conservation

A summary of all aspects being tracked and reported in the Laboratory's Site Sustainability Plan is found in Attachment A to this plan.

LBNL's approach to sustainable environmental stewardship poses the challenge of implementing its EMS in a performance-based and cost-effective fashion. The purpose of this plan is to describe Berkeley Lab's approach for achieving such an EMS, including an overview of the roles and responsibilities of key Laboratory parties at its main site and satellite facilities.

This approach begins with a broad-based environmental policy consistent with that stated in Chapter 11 of the LBNL *Health and Safety Manual*<sup>11</sup> (PUB-3000). This policy states that Berkeley Lab is committed to the following:

1. Complying with applicable environmental, public health, and resource conservation laws and regulations.
2. Preventing pollution, minimizing waste, and conserving natural resources.
3. Correcting environmental hazards and cleaning up existing environmental problems, and
4. Continually improving the Laboratory's environmental performance while maintaining operational capability and sustaining the overall mission of the Laboratory.

A continual cycle of planning, implementing, evaluating, and improving processes will be performed to achieve goals, objectives, and targets that will help LBNL carry out this policy. On an annual basis, environmental aspects will be identified and their impacts to the environment evaluated. Objectives and targets will be developed (or updated) for each aspect determined to have a significant impact. Environmental Management Programs (EMPs) will be prepared (or updated) to document actions



necessary for reducing certain environmental impacts. Each EMP will identify responsible parties and associated target deadlines for each action.

On a regular basis, ranging from quarterly to annually, environmental programs will be reviewed for compliance issues and effectiveness. Annually, LBNL senior management will be briefed on the status of the EMS. In addition, at least once every 3 years a third-party audit will be performed to validate that the EMS is being implemented according to plan.

This Plan is integrated with the Laboratory's Integrated Safety Management System (ISMS) as described in the LBNL *Integrated Environment, Safety & Health Management Plan*<sup>12</sup> (PUB-3140). To the extent that it is practical, ISMS processes will be used to support environmental performance improvement. In other cases, new processes will be developed to support the LBNL EMS and these will be integrated with the LBNL ISMS. This approach will allow LBNL to develop an EMS that is cost-effective and to focus resources on those activities with the highest potential environmental benefits.

The LBNL EMS reflects the eighteen elements of the ISO 14001 standard, but does not include certification. Such certification is not a requirement of DOE O 436.1. Berkeley Lab has determined that such certification imposes extensive requirements for preparing detailed documentation and creating processes that have little environmental benefit and are not cost-effective for the Laboratory. More specifically, meeting all of the requirements of ISO 14001 would force a shift in resources away from activities that could be used to improve environmental performance toward activities that have relatively little value. As an option available in DOE O 436.1, the LBNL EMS conforms to the elements and framework found in the standard. Section 3 of this EMS Plan describes how each one of the eighteen elements in the ISO standard is addressed, including reference to any procedure, plan, or process that implements these elements.

## 2.0

# Introduction

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## 2.1 REQUIREMENTS

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* established the policy that Federal agencies conduct their environmental, transportation, and energy-related activities in a manner that is environmentally, economically and fiscally sound, integrated, continually improving, efficient, and sustainable. Its overarching policy and directive is:

*"It is the policy of the United States that Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner."*

Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, reinforced this policy and pushed for much greater sustainability efforts by the Federal government.

*"It is therefore the policy of the United States that Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies and environmentally preferable materials, products, and services; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; strengthen the vitality and livability of the communities in which Federal facilities are located; and inform Federal employees about and involve them in the achievement of these goals."*

*It is further the policy of the United States that to achieve these goals and support their respective missions, agencies shall prioritize actions based on a full accounting of both economic and social benefits and costs and shall drive continuous improvement by annually evaluating performance, extending or expanding projects that have net benefits, and reassessing or discontinuing underperforming projects."*

The signing of EO 13514 coupled with a movement within DOE to streamline its directives system, DOE consolidated Orders 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*, and 450.1A, *Environmental Protection Program*, into a single new directive, DOE O 436.1, *Departmental Sustainability*. This directive therefore addresses the requirements of Executive Orders 13423 and 13514 with the expressed intent of:

- Ensuring DOE carries out its missions in a sustainable manner that addresses national energy security and global environmental challenges, and advances sustainable, efficient and reliable energy for the future,
- Instituting wholesale cultural change to factor sustainability and greenhouse gas reductions into all DOE corporate management decisions, and
- Ensuring DOE achieves the sustainability goals established in its Strategic Sustainability Performance Plan pursuant to applicable laws, regulations and Executive Orders, related performance scorecards, and sustainability initiatives.

Whereas the previous directives were quite detailed in identifying contractor requirements, DOE O 436.1 is much less prescriptive. There are two key criteria in this directive that Berkeley Lab must follow. The first being development or support development and commitments to identify contributions toward meeting the DOE sustainability goals initiated by the referenced Executive Orders, and as provided in the annual *DOE Strategic Sustainability Performance Plan*. Berkeley Lab assembles its contributions to this DOE plan in a site sustainability plan that is updated annually. At the present time, the *FY2012 LBNL Site Sustainability Plan* represents the most current plan.

The second condition requires the development and implementation of an environmental management system that is certified to or conforms with the ISO 14001:2004 standard. This management system must also integrate the organization's sustainability goals. At the present time, Berkeley Lab has chosen to have its EMS conform with the elements and framework of the ISO standard. Section 3 of this Plan describes how each one of the eighteen elements in the ISO standard is addressed, including reference to any procedure, plan, or process that implements these elements.

Berkeley Lab uses its Environmental Management System as the primary management approach for addressing a broad set of environmental aspects, along with establishing objectives and targets to ensure implementation and collection, analysis, and reporting of information to measure performance for aspects determined to be significant. The EMS is not a stand-alone environmental program, but a framework within which existing and new organizational responsibilities, programs, and activities are linked. When properly implemented, the EMS will enable the Laboratory to clearly identify and establish goals, develop and implement plans to meet the goals, determine measureable progress towards the goals, and make changes to ensure continual improvement.

This Plan was prepared in accordance with LBNL's document management and control policy found in the Information Management section of the *Requirements and Policies Manual*<sup>13</sup> (PUB-201) and thoroughly explained in the Lab's PUB-3111, *Operating and Quality Management Plan* (OQMP)<sup>14</sup>. The OQMP is a set of operating principles, requirements, and practices used to support LBNL organizations in achieving reliable, safe, and quality performance in their work activities. LBNL's EMS is listed as one of the management systems and process controls in the OQMP. The OQMP applies to all LBNL organizations.

The OQMP also provides commitment by LBNL's senior leadership to the EMS Plan and its implementation with the following statement:

*“The Director of the Office of Institutional Assurance (OIA) is the senior LBNL manager who has the responsibility and authority to develop, implement, assess, and improve the LBNL Operating and Quality Management Plan Under the Director's charge, staff from the Office of Contract [sic] Assurance (OCA) has the day-to-day operational responsibility to ensure that compliance, scientific excellence, best management practices, and continuous improvement are achieved at LBNL.”*

The Berkeley Lab EMS must be validated by the DOE Berkeley Site Office, pursuant to technical guidance associated with EO 13423.

## 2.2 PERFORMANCE-BASED APPROACH

The performance-based approach applies the elements of ISO 14001 in a manner that provides real and tangible business value, rather than an approach that applies all the requirements of an ISO 14001-type of EMS regardless of their value. This approach allows the Berkeley Lab to focus resources on those activities that have a more valuable and stronger environmental benefit and to maintain the current strengths of the environmental compliance programs. Performance of the EMS is measured by multiple methods and involves various internal and external organizations.

As one of several tools for implementing the EMS plan, LBNL establishes and maintains Environmental Management Programs for its significant environmental aspects and impacts. EMPs assist in achieving the goals and objectives of sustainable practices referenced by DOE O 436.1. These are practices that originated in requirements documents such as Executive Orders 13423 and 13514, the Energy Policy Act of 2005, and the Energy Independence and Security Act of 2007. Sustainable practices of particular interest to DOE are:

- Improvement in energy efficiency and reduction in greenhouse gas emissions,
- Use and on-site generation of renewable energy,
- Reduction in water consumption,
- Acquisition of sustainable products and materials,
- Pollution and waste prevention/diversion and recycling programs,
- High performance and sustainable buildings,
- Vehicle fleet management and alternative fuels consumption, and
- Electronics stewardship.

More on Berkeley Lab's EMPs is discussed throughout Section 3, *Program Elements*. In addition, a summary of all aspects being tracked and reported in the Laboratory's Site Sustainability Plan is found in Attachment A to this plan.

In terms of oversight reporting on efforts to continually improve the performance of its EMS, LBNL conducts operational assessments to identify pollution prevention and sustainable practice opportunities. Using self-assessments performed by the various divisions that evaluate environmental and safety performance, LBNL's Office of Contractor Assurance (OCA) annual reports on the effectiveness of the Lab's ISMS through the ISMS assessment process (See Integrated ESH Management Plan, subsection 6.7.1.5, *An Annual Assessment of LBNL's ISMS is Conducted*).

A more important role played by OCA for measuring performance of the EMS program is through administering the Lab-wide *Performance Evaluation Measurement Plan*<sup>15</sup> (PEMP), which is a reporting obligation within the operating contract between DOE and the Regents of the University of California. Measures explicitly targeting EMS performance are included in the PEMP for the Environment, Health, and Safety (EHS) Division as well as the PEMP for the Facilities Division. These measures set targets and establish scoring gradients used to grade the EMS's annual performance. PEMP's, both individual and collectively, play a critical role in the annual scoring by DOE of LBNL's overall performance, which directly affects the status of the operating contract.

External reporting on EMS performance is governed by two federal requirements; the *Pollution Prevention Tracking and Reporting System*, and the *EMS Data Call*. Reporting is based on fiscal year. Reporting is required of all federal agencies and their contractors, such as Berkeley Lab.

The *Pollution Prevention Tracking and Reporting System* obtains information from Berkeley Lab on sustainable acquisition, waste generation and diversion, electronics stewardship, and other pollution prevention accomplishments.

The *EMS Data Call* follows an established set of metrics that are set at the federal level and apply to all federal agencies. Metrics may change from year to year. LBNL's EMS program manager and the DOE BSO counterpart concur on reporting grades for each metric.

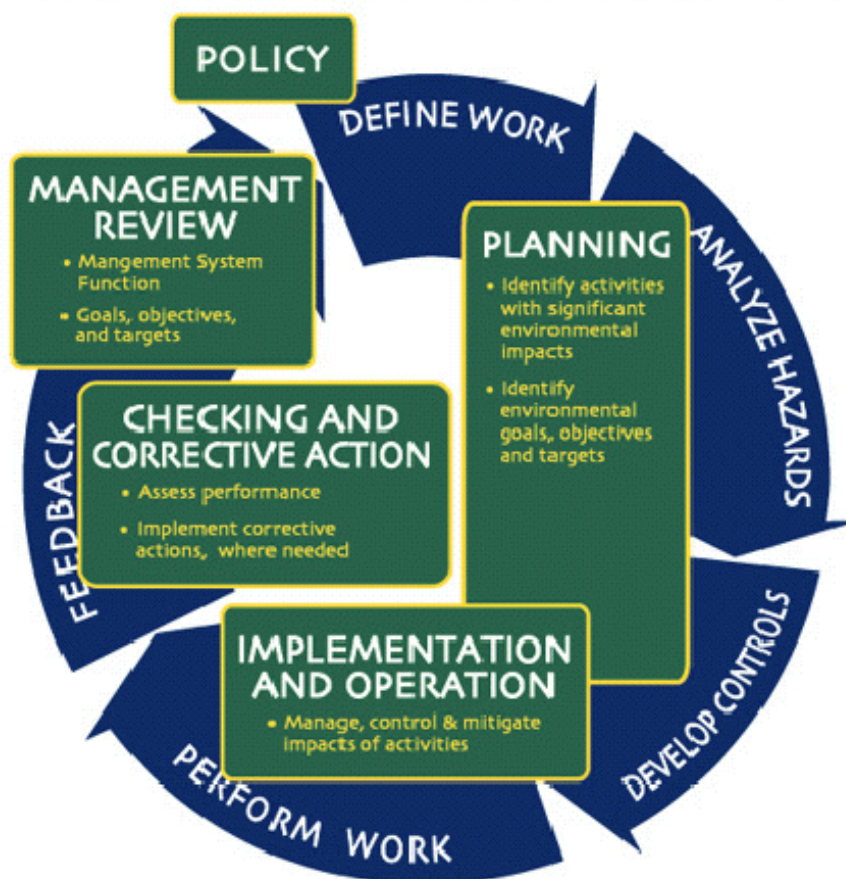
DOE expects that the requirements of Order 436.1 also apply to LBNL's subcontractors. Compliance with applicable environmental regulations has long been a contractual obligation of subcontractors. Requiring sustainable practices of subcontractors is an evolving process. LBNL has identified contract types that are subject to EMS performance-based consideration. Of the nearly 80 types of contracts issued by LBNL, it is estimated that about 60% will be affected. LBNL presently has the option of including sustainable practice clauses in solicitations and subcontracts involving U.S. Environmental Protection Agency-Designated Items (i.e., a product that is or can be made with recovered material), environmentally preferable products and services, energy-consuming products listed in the ENERGY STAR® or Federal Energy Management Programs, and USDA-designated biobased products. An existing EMP (*Procurement of Goods and Services*) tracks the Laboratory's overall annual use of energy efficient and recycled material products, including that reported by subcontractors, although the current emphasis by DOE and the *Pollution Prevention Tracking and Reporting System* is more on tracking contract actions rather than individual transactions.

## 2.3 GOALS

The goals of the LBNL EMS are four-fold:

1. Comply with all applicable environmental protection, public health, and resource conservation requirements.
2. Prevent pollution, minimize waste, and conserve natural resources.
3. Correct environmental hazards and cleaning up existing environmental problems, and
4. Continually improve the Laboratory's environmental performance in a cost-effective manner while supporting the overall mission of the Laboratory.

A continual cycle of planning, implementing, evaluating, and improving processes and actions is followed to achieve these EMS goals (see the diagram below).



## 2.4 INTEGRATION OF EMS WITH ISMS

Berkeley Lab has integrated this EMS with the Integrated Safety Management System. To the extent that it is practical, existing ISMS processes are used to support environmental performance improvement and



compliance management. Where that is not the case, new processes will be developed to support LBNL's EMS. These processes will also be integrated with the LBNL ISMS.

Both the EMS and ISMS strive for continual improvement, through a plan-do-check-act cycle. This cycle calls for defining the scope and purpose of the system, followed by a planning (**Plan**) step to develop programs and procedures that must then be implemented (**Do**). Once implemented, programs must be assessed (**Check**) and any problems corrected (**Act**) to improve the effectiveness of the management system and to achieve improved environment, safety, and health performance.

Table 1 shows the parallels between the five EMS top-level elements and ISMS core functions.

**Table 1. Five EMS Top-Level Elements and ISMS Core Functions**

Environmental Management System		Integrated Safety Management System
	Policy	
<b>PLAN</b>	Planning	Analyze Hazards
<b>DO</b>	Implementation and Operation	Develop & Implement Hazard Controls
<b>CHECK</b>	Checking and Corrective Action	Provide Feedback and Continuous Improvement
<b>ACT</b>	Management Review	Annual ISMS Review

The LBNL EMS has evolved over time with improvements coming from experience gained in implementing the Plan as well as from changing requirements. The philosophy of the approach continues to leverage on, and integrate with, systems and approaches that are already in place. For example, since the ISMS program is an effective and documented system, it has served as an excellent platform for building the LBNL EMS. All elements of the ISO 14001 standard are addressed in this EMS Plan, though LBNL continues to focus its resources on the key EMS elements that provide the most value.

## 3.0

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# Program Elements

Consistent with the framework of ISO 14001, implementation of the LBNL EMS program addresses the following eighteen elements:

1. General requirements
2. Environmental policy
3. Environmental aspects
4. Legal and other requirements
5. Objectives, targets, and Environmental Management Programs
6. Structure and responsibility
7. Training, awareness and competence
8. Communication
9. Documentation
10. Document control
11. Operational control
12. Emergency preparedness and response
13. Monitoring and measurement
14. Evaluation of compliance
15. Nonconformance, corrective action, and preventive action
16. Records
17. Audits and appraisals
18. Management review

### 3.1 GENERAL REQUIREMENTS

The intent of this element is to establish, document, implement, maintain, and continually improve an organization's EMS through the remaining elements of the ISO 14001 standard. The scope of LBNL's EMS covers the activities of all divisions as noted by reference to the various institutional documents throughout this chapter (e.g., *Requirements and Policies Manual*; *Integrated Environment, Safety &*



*Health Management Plan; Health and Safety Manual (PUB-3000); Operating and Quality Management Plan (PUB-3111).* Activities in the context of this EMS include those at both onsite and offsite locations.

### 3.2 ENVIRONMENTAL POLICY

The environmental policy is contained within the overall environment, safety, and health (ES&H) policy that is found in the *Requirements and Policies Manual* and the *Integrated Environment, Safety & Health Management Plan*:

*"It is the policy of Lawrence Berkeley National Laboratory to perform all work safely with full regard to the well-being of workers, guests, the public, and the environment."*

The environmental portion of this policy is further detailed in Chapter 11 (Section 11.1) of the Berkeley Lab *Health and Safety Manual* (PUB-3000). LBNL is committed to the following policy:

1. Complying with applicable environmental, public health, and resource conservation laws and regulations.
2. Preventing pollution, minimizing waste, and conserving natural resources.
3. Correcting environmental hazards and cleaning up existing environmental problems, and
4. Continually improving the Laboratory's environmental performance while maintaining operational capability and sustaining the overall mission of the Laboratory.

Implementing this policy relies on the following core safety values found in Berkeley Lab's ISMS:

- The institution demonstrates a strong commitment to safety by integrating safety into all facets of our work.
- Managers and supervisors are actively involved and demonstrate leadership in performing work safely.
- Individuals take ownership for safety and continually strive to improve.
- Individuals demonstrate an awareness and concern for the safety of others.

As stated in Berkeley Lab's *Integrated Environment, Health & Safety Plan*, in accordance with DOE Policy 450.4 *Safety Management System Policy*, whenever the term safety is used, "...the term safety is used synonymously with environment, safety and health (ES&H) to encompass protection of the public, the workers, and the environment." Clause I.074 of Contract 31 expands the definition of safety by "including pollution prevention and waste minimization." Contract 31 is the operating contract between the Department of Energy and the Regents of the University of California. It is also referred to as Contract No. DE-AC02-05CH11231<sup>16</sup>.

### 3.3 ENVIRONMENTAL ASPECTS

Identification and prioritization of significant environmental aspects is a key part of the systematic planning involved in environmental programs designed to protect public health and the environment, prevent pollution, and conserve resources. Environmental protection and pollution prevention programs are outlined in Chapter 11 of PUB-3000. Specific information on LBNL integration of pollution prevention into the planning process is provided in subsection 11.3.14, *Waste Minimization and Pollution Prevention*. The EMS Core Team, which includes members from various divisions across the Laboratory charged with administering important elements of the EMS, addresses such areas as the procurement of energy-efficient, water-conserving, and environmentally-preferable products, the development of sustainable practices that conserve natural resources, and the implementation of sustainable building designs and practices.

The Core Team identifies environmental aspects resulting from LBNL operations. Environmental aspects are considered activities or services that may produce a change to the environment, whether adverse or beneficial, wholly or partially, immediately or gradually. Consideration is given to activities involving pollution prevention, waste generation and recycling, emissions and discharges to the environment, material and resource use, land and building development and use, energy and water conservation, and transportation.

A list of environmental aspects is maintained that aids the Core Team in determining significant issues to focus on each year. Attention is given to those aspects that will provide the most potential value toward improving Berkeley Lab's environmental performance, compliance effectiveness, and sustainability practices. Additional environmental aspects are considered in subsequent years using the routine EMS goal-setting approach.

The Core Team meetings include detailed discussion of Berkeley Lab's routine activities and services, such as research, engineering, maintenance and operations, administration, transportation, and construction. Emergency response and catastrophic events may also be discussed. An extensive list of environmental aspects/impacts is maintained and reviewed at least once each year. Executive and DOE Orders, and federal, state and local agency laws and regulations are reviewed for developing Berkeley Lab's environmental aspect/impact inventory list. An updated worksheet of these aspects/impacts is provided to each Core Team member for further evaluation. The worksheet is revised based on input from team members.

From this inventory worksheet, the Core Team determines which aspects are most significant. Significant aspects are evaluated relative to the framework of environmental impacts and objectives. The Core Team considers the life cycle of the Laboratory's activities or services and their potential impacts on the biosphere. Those aspects that are regulated by DOE or other regulatory agencies may be given greater

emphasis. The Core Team uses the following (unranked) factors to shape its decisions on the significance of an aspect:

- Severity
- Impact on Laboratory's mission
- Duration
- Probability of occurrence
- Cost
- Effect on public image
- Potential legal exposure, and
- Potential for improvement.

Each aspect/impact is given a numeric rating based on a 3-tiered scoring system: high (3), medium (2), and low (1). Average scores and overall ratings for each aspect/impact are determined and used to provide a starting point for the significance determination. Before the significance list is finalized, further evaluations of these identified aspects/impacts by the Core Team and other related employees may be performed. The Core Team may determine that additional information is needed to evaluate a particular product or activity; the team leader will assign the responsibility for collecting that information to an appropriate member. In these cases, selection of these significant aspects will not be based on the overall ratings, but on subsequent evaluations and Core Team discussions.

The EMS Core Team is further described in the EHS Procedure 271, *EMS Implementation (Core) Team*<sup>17</sup>. The process of identifying environmental aspects and impacts and determining their significance is further described in EHS Procedure 272, *Identification of Significant Environmental Aspects and Impacts for the EMS*<sup>18</sup>.

### 3.4 LEGAL AND OTHER REQUIREMENTS

The contract (No. DE-AC02-05CH11231) between DOE and the Regents of the University of California for managing Berkeley Lab contains the official language and provisions that provide the legal basis for all Laboratory activities. Appendix I<sup>19</sup> of the contract contains a list of all the environmental, safety, and health laws, regulations, standards, orders, policies, and procedures that are applicable to LBNL. These standards are referred to as the *Environment, Safety & Health Standards Set for LBNL*.

Identifying and maintaining the set of environment, safety, and health standards applicable to LBNL is defined by the Change Management Process. This process provides assurance that employees, the public, and the environment are adequately protected. The process also describes how LBNL and the DOE Berkeley Site Office integrate their change management efforts for the *ES&H Standards Set*.

Additional information regarding LBNL legal requirements can be found in Section 10, “Standards and Requirements”, of the *Integrated Environment, Safety & Health Safety Management Plan*. Appendix C of this plan contains the entire Change Management Process.

### 3.5 OBJECTIVES, TARGETS, AND ENVIRONMENTAL MANAGEMENT PROGRAMS

#### Objectives and Targets

Objectives and targets are established based on the analysis of significant aspects and impacts. The EMS Core Team reviews the LBNL mission, long-term goals and strategic plans to determine if the objectives are consistent with these goals. Through the use of appropriate metrics, progress is measured toward achieving objectives and targets. The metrics are an essential piece of information used in appraisals, audits, and management reviews of the EMS. The metrics serve as the basis for action and for continual improvement.

The EMS Core Team may also solicit the views of parties external to the team. These parties may include DOE and other LBNL organizations, such as the Public Affairs office, to determine whether additional objectives are needed to address the views of interested parties.

All significant aspects are reviewed at least annually by the Core Team. If necessary, updated objectives and targets are established for each significant aspect. The Core Team also reviews each goal to determine if additional objectives need to be established. Objectives and targets should be consistent with the Laboratory’s policies and plans. Objectives are further categorized into one or more of the following areas:

- **“C” – Control/Maintain** – continued ongoing control and compliance with regulations and/or policies, guidelines and procedures.
- **“I” – Improve** – stated ongoing improvement actions already established or readily definable.
- **“S” – Study/Investigate** – requires investigation of potential alternatives for improvement including technology and process changes.

The Core Team reviews objectives for technological, financial, operational, and business parameters. They evaluate various options for meeting objectives, taking into consideration the Laboratory’s resource and mission constraints, along with goals and time periods that are realistic to achieve the established targets.

Additional information regarding objectives and targets can be found in EHS Procedure 273, *Environmental Management Programs of the EMS*<sup>20</sup>. Additional information on site-specific goals is provided both in the next section, Environmental Management Programs, and on the EMS website.

#### Environmental Management Programs

For each significant aspect selected, the Core Team develops an EMP, appoints a leader, and establishes objectives and targets. The EMP leader may organize a task force to develop and implement this program.

Using the objectives and targets, the Core Team establishes goals and strategies for the EMP, actions to achieve goals, identifies resource needs, develops procedures, metrics, or techniques, and sets up schedules. Each EMP typically follows a general work breakdown structure and may have multiple tasks or actions, and each task may employ specified procedures or techniques that must be developed, implemented, or used in order to achieve the objective and target. The level of detail of the work breakdown structure is tailored to the complexity and number of LBNL groups involved with implementing the EMP. A program schedule is typically prepared to help the EMP leader track the status of various EMP-related actions.

Periodically during the year, each EMP leader will present the progress results to the Core Team. The Core Team will monitor the progress of each EMP, make suggestions and comments, identify potential problems, and provide additional support when necessary. The Core Team meeting minutes will document EMP activities.

As with Objectives and Targets, additional information regarding EMPs can be found in EHS Procedure 273, *Environmental Management Programs of the EMS*. The current set of EMPs is located on the EMS website.

### 3.6 STRUCTURE AND RESPONSIBILITY

Successful implementation of this EMS requires varying degrees of commitment from all Berkeley Lab employees and subcontractors. Policy statements in several documents previously mentioned in this Plan establish expectations for all to follow responsible and sustainable environmental practices in their work activities. Section 3.8 describes the various means by which the EMS program attempts to communicate these expectations to the Laboratory community as well as further educate the community on environmental management and sustainable practices.

The majority of the key roles and responsibilities are administered by a relatively small group of Berkeley Lab individuals:

- Senior management commitment to the EMS is the responsibility of the Director of the Environment, Health, and Safety Division. The Director approves the EMS Plan.
- Environmental compliance auditing is the responsibility of the Environmental Services Group of the EHS Division.
- A third-party external audit by a qualified auditor will be performed at least once every 3 years to validate that the EMS is being implemented according to this plan.
- Remaining responsibilities for implementing the EMS rest largely with some or all members of the Core Team.

Sections 3.14 and 3.17 provide a more in-depth discussion on compliance auditing and internal and external EMS auditing, respectively.

The EMS Core Team, lead by the EMS Program Manager, is largely responsible for implementing day-to-day aspects of the program. The EMS Program Manager is a representative of the EHS Division and is responsible for team leadership. The Core Team currently consists of representatives from the EHS, Facilities, and Procurement organizations. Members of the team were selected for their knowledge of environmental management programs, their organizational role, and the potential impact they can have on achieving the sustainability goals set forth by DOE. As issues arise, other organizations may be consulted or brought into the team. Similarly, input from other groups (e.g., LBNL Sustainability Transformation Team, Safety Advisory Committee or Division Safety Coordinators) can be solicited through designated Core Team representatives. The composition of the Core Team is expected to change with time as the program evolves. A representative from the DOE Berkeley Site Office is invited to the meetings in order to maintain an operational awareness of EMS activities. A member of Berkeley Lab's Public Affairs is also invited to understand more about efforts to reduce the Lab's environmental impact.

The EMS Program Manager convenes meetings, leads the team through design, implementation, and ongoing use of the EMS, and serves as the main liaison between the EMS team and LBNL senior management. Records (e.g., meeting minutes, presentations, worksheets, EMPs) and other document control matters are maintained by the EMS Program Manager. Records will be retained for an indefinite period, or as required under records-retention procedures.

### 3.7 TRAINING, AWARENESS, AND COMPETENCE

In LBNL's EMS approach, training is targeted and graded, commensurate with the EMS activity. Four types of training include:

1. General EMS awareness
2. Comprehensive EMS awareness
3. EMS implementation
4. EMS auditor

The general EMS awareness training includes summary information about environmental management systems and the approach taken by LBNL's EMS. The target audience includes key LBNL senior managers and LBNL staff critical to the implementation of an EMP. In addition, training is included in EHS Course EHS0010, *Introduction to ES&H at LBNL*, to provide new staff with awareness on how environmental concerns are part of the LBNL general safety and ISMS training. Employees are reminded in this training that the Plan–Do–Check–Act functions of ISMS also apply to mitigating the environmental impacts of their activities.

Core Team members need a more comprehensive level of EMS awareness to ensure their competence in developing and implementing the EMS. This is accomplished by single or multiple training sessions conducted by personnel experienced with the implementation of an EMS. These may be arranged in conjunction with the Core Team meetings or conducted as separate, dedicated training sessions. Topics

discussed at the Core Team meetings also serve as an on-the-job training opportunity that is documented by meeting minutes. Core Team members are also encouraged to participate in the EMS implementation or auditing training courses offered by accredited consultants. Core Team members, key support staff, or EMP task force members may also participate in other related training classes or conferences on pollution prevention, waste minimization, sustainable development or acquisition offered by the DOE, U.S. Environmental Protection Agency, or other organizations.

The EMS Program Manager is required to take a comprehensive EMS implementation course. This type of course provides substantial details about EMS concepts and elements by typically requiring 1 to 3 days of coursework.

LBNL staff performing internal reviews of the EMS program must complete a comprehensive EMS implementation course and additional coursework that provides substantial information about auditing a systems-based program. The additional coursework usually requires an additional day or two of instruction.

Additional information regarding EMS training can be found in EHS Procedure 274, *EMS Training*<sup>21</sup>.

### 3.8 COMMUNICATION

Communicating EMS-related matters is performed in a number of ways at Berkeley Lab, such as by publishing an annual *Site Environmental Report*<sup>22</sup>, posting information on websites and lessons learned databases, preparing articles for Berkeley Lab publications, delivering presentations to specific LBNL groups, and offering access to an employee EHS concerns website.

Each year, LBNL prepares an integrated report on its environmental programs to satisfy the requirements of DOE Order 231.1A, *Environment, Safety, and Health Reporting*.<sup>23</sup> The *Site Environmental Report* summarizes Berkeley Lab's environmental management performance, presents environmental monitoring results, and recaps significant environmental programs for the previous calendar year. The SER is a publically-available document that is posted on the EHS Environmental Services Group website. An announcement in LBNL's daily electronic newsletter, *Today at Berkeley Lab*, is made whenever a new SER is made available.

The Environmental Services Group website also contains a link to important EMS documents, including the EMS Plan, the current set of EMPs, EMS fact sheets, internal assessments, and third-party audit reports. These web pages provide open access to LBNL staff, DOE, other regulatory agency staff, and community members. Similar to the SER, these web pages are accessible at the Laboratory's main webpage through its [A-Z Index](#) under the letter "E".

Berkeley Lab's OCA manages a lessons learned and best practices database. Noteworthy developments in the EMS program can be posted to this database where LBNL personnel can review, or if requested, receive an automated notification of new EMS-related postings.



Whenever appropriate, articles on EMS topics are included in Berkeley Lab publications, such as *Today at Berkeley Lab*. Topics may be determined by EMS Core Team members based on EMP activities and challenges. Environmentally-related articles may also be submitted by the general Laboratory population. The Laboratory community can also learn more about EMS program activities through occasional presentations provided by a Core Team member to groups such as the Safety Advisory Committee and Division Safety Coordinators.

LBNL employees or external parties may communicate their concerns or interests over any ES&H topic using a dedicated [Environment, Health & Safety Concerns](#) webpage. At this site, visitors can send environmental concerns or questions to a special electronic address ([ems@lbl.gov](mailto:ems@lbl.gov)). Anonymous reporting is also an option.

Communications within the DOE and University of California communities is also important. All members of the Core Team may exchange knowledge with professional colleagues at other DOE-funded facilities or at DOE offices. The EMS Program Manager is likely the individual with the most opportunities for these exchanges through regular participation in such forums as DOE's Sustainability Assistance Network monthly calls where valuable new requirements and lessons learned are shared between members.

The success of the EMS depends on ongoing and multiple lines of communication. These lines can vary depending on factors such as the level of environmental impact, the types of control, the degree in which an environmental concern vertically and horizontally permeates the organization, and the level of effort needed to promote environmental compliance or performance goals.

### 3.9 DOCUMENTATION

The EMS includes the following documentation:

- An EMS Plan that describes the scope and elements of the environmental management system and how it relates to the Laboratory's ISMS and ISMS processes.
- Six implementing procedures for the EMS Plan that provide additional information about the following activities: (1) establishing an implementation team, called Core Team, (2) identification of significant environmental aspects and impacts, (3) environmental management programs, (4) training, (5) assessments and audits, and (6) management review.
- EMPs for aspects with significant environmental impacts, including objectives and targets for addressing each impact.
- An *Environmental Aspect and Impact Worksheet* that provides a comprehensive list of environmental aspects shows how they were evaluated and which ones were considered significant.
- Audit and assessment reports from internal and external organizations.



- Other records including meeting minutes and attendance sheets, presentation materials, fact sheets, and training records.

Much of this information is available at the Laboratory's Environmental Management System website.

### **3.10 DOCUMENT CONTROL**

EMS documents that are formally reviewed and approved for adequacy prior to issue are this EMS Plan, its six implementing procedures, and an audit and assessment manual.

This document, the EMS Plan, is prepared by the EMS Program Manager, reviewed by the Core Team members, and approved by the Director for the EHS Division. This Plan was prepared in accordance with LBNL's document management policy, which is stated in the Information Management section of the *Requirements and Policies Manual*, and detailed in the Lab's PUB-3111, *Operating and Quality Management Plan*.

The Plan's implementing procedures are also prepared by the EMS Program Manager and approved by the Group Leader of the Environmental Services Group.

These documents are reviewed and updated as necessary, based on the judgment of the EMS Program Manager. The EMS Program Manager also retains hardcopy versions of critical documentation. Electronic versions of essential and relevant documents are maintained in a centralized network location that is regularly backed-up for protection. As noted throughout this Plan, many of the key documents are kept on the LBNL EMS website. Documents are tracked by a date and revision number to maintain control.

### **3.11 OPERATIONAL CONTROL**

Operational controls may be evaluated for those operations that are associated with the significant environmental aspects in order to determine if activities are conducted in a way that will reduce the adverse impacts associated with them. Documented procedures may be considered in situations where there are difficulties in achieving or maintaining environmental objectives and targets, or where the absence of such procedures may lead to deviations from LBNL's environmental policy.

### **3.12 EMERGENCY PREPAREDNESS AND RESPONSE**

There are three principle documents that establish emergency preparedness and response policies and procedures at LBNL. They are:

1. *Master Emergency Program Plan (PUB-533)*<sup>24</sup>
2. *Hazardous Materials Business Plan*<sup>25</sup>
3. *Spill Prevention Control and Countermeasures Plan*<sup>26</sup>

The [\*Master Emergency Program Plan\*](#) establishes policies, procedures and an organizational structure for responding to and recovering from a major disaster at LBNL. This document was prepared and is maintained to meet DOE's contractor requirements in DOE Order 151.1C, *Comprehensive Emergency Management System*<sup>27</sup>.

According to California regulation, facilities handling specific chemicals in excess of certain amounts must annually prepare a *Hazardous Materials Business Plan* and submit it to local administering agencies. As a federal facility, LBNL is exempt from this state regulation but voluntarily prepares this plan and submits it to the City of Berkeley. The plan contains information about the amounts and locations chemicals are used as well as information about emergency plans and procedures. The current *Hazardous Materials Business Plan* for the main site is available from the [EHS website](#) under the "References" menu or in the "EHS Quick Links" section. Similar plans exist for four other offsite facilities; the Berkeley West Biocenter, the Joint Bioenergy Institute, the Joint Center for Artificial Photosynthesis, and the Joint Genome Institute.

The [\*Spill Prevention Control and Countermeasures Plan\*](#) for the main LBNL site contains policies and procedures for the safe storage and use of oil and for responding to oil spills. It was prepared and is maintained to meet federal and state regulatory requirements for these materials and practices. A similar plan exists for the JGI site in Walnut Creek.

### 3.13 MONITORING AND MEASUREMENT

LBNL has developed and implemented an environmental monitoring program to ensure that its activities are conducted in a manner that will protect and maintain environmental quality. The results of this program demonstrate compliance with requirements imposed by federal, state, and local agencies; confirm adherence to DOE environmental protection policies; and support environmental management decisions. The environmental monitoring program is implemented by the EHS Environmental Services Group and consists of four major activities:

1. Effluent Monitoring
2. Environmental Surveillance
3. Meteorological Monitoring
4. Pre-operational Monitoring

Further information can be found in the [\*Environmental Monitoring Plan\*](#)<sup>28</sup>.

Environmental management activities are also monitored as a part of Berkeley Lab's ES&H self-assessment program. The self-assessment program is a formal, internal process used to evaluate ES&H programs, policies, and processes. The process is designed to ensure that Laboratory work is conducted safely and with minimal adverse effects to workers (employees, participating guests, and subcontractors), the public, and the environment. The self-assessment program is an important mechanism used to institute continual improvements to the Laboratory's ES&H programs. It uses performance objectives and criteria based on the ISM core functions and guiding principles to evaluate the ES&H performance. Self-assessments generally focus on safety issues, but divisions at LBNL are encouraged to assess environmental impacts as well, such as the degree of acceptance of sustainable practices in work environments.

Additional information about the Laboratory's self-assessment program can be found in the *Division ESH Self-Assessment Manual (PUB-3105)*<sup>29</sup>.

### 3.14 EVALUATION OF COMPLIANCE

LBNL's Environmental Services Group reviews programs under its purview following the Laboratory's institutional technical assurance assessment requirements. These obligations are defined in the *Division (ES&H) Self-Assessment Manual (LBNL/PUB-3105)* and described by the *ES&H Technical Assurance Program (TAP) Manual (LBNL/PUB-913E)*<sup>30</sup>. The TAP Manual describes:

- Goals and objectives,
- Roles and responsibilities,
- Three-year schedule of assessments,
- Plan elements,
- Methods for conducting assessments, and
- Reporting assessment results.

All completed reports are submitted to LBNL's Office of Contractor Assurance.

### 3.15 NONCONFORMANCE, CORRECTIVE ACTION, AND PREVENTIVE ACTION

Environmental compliance inspections and reviews are conducted by a number of external organizations including:

- University of California Office of the President
- U.S. Department of Energy
- U.S. Environmental Protection Agency, Region 9
- California Department of Toxic Substances Control
- California Department of Public Health
- California Air Resources Board

- California Water Resources Control Board
- Regional Water Quality Control Board
- Central Contra Costa Sanitary District
- East Bay Municipal Utility District
- Bay Area Air Quality Management District
- City of Berkeley

Internal environmental assessments may also be conducted by Laboratory organizations under an ongoing self-assessment program briefly discussed in Section 3.13. Regularly scheduled internal assessments are conducted by the Environmental Services Group. Further information on internal assessments is presented below in Section 3.17.

Issues, including findings and observations, from inspections, reviews, and assessments are documented in reports, adhering to the institutional requirements specified in the Laboratory's *Issues Management Program*<sup>31</sup>. In response to findings, laboratory management develops action plans to correct the identified operational and management deficiencies as necessary. The plans include schedules for completing the corrective actions and can provide for regular reporting, as required, to the agency or office that conducted the appraisal until all deficiencies are closed out.

In order to facilitate the corrective action process, the Laboratory has implemented a facility-wide web-based system to track actions, called the Corrective Action Tracking System (CATS). It serves as a means for LBNL management to identify, track, and review resolution of institutional deficiencies. Significant EMS deficiencies, such as audit findings, must be entered into CATS. Less significant deficiencies, such as observations or recommendations to follow a best management practice, are entered into CATS at the discretion of the EMS Program Manager.

Further information regarding the Laboratory's policies and procedures regarding compliance reviews and the corrective action process can be found in Section 11, "*Evaluating and Resolving Noncompliances*", of the [\*Integrated Environment, Safety & Health Management Plan\*](#).

### 3.16 RECORDS

Records management is a line-management function at Berkeley Lab. The Laboratory's Archives and Records Office assists line management in meeting its record management responsibilities. The Laboratory's policies and procedures for records management are described in the archives and records management policy found in the Information Management section of the Laboratory's *Requirements and Policies Manual*<sup>32</sup>.

### 3.17 AUDITS AND APPRAISALS

#### Internal Assessment

An internal assessment of the EMS program is performed in accordance with the schedule defined in the by the Laboratory's *Environment, Safety and Health Technical Assurance Program Manual* (LBNL/PUB-913E). These requirements are derived from DOE O 414.1D, *Quality Assurance*, and DOE O 450.4.2, *Integrated Safety Management*, ES&H performance and self-assessment.

The internal assessors should be knowledgeable about the elements of the ISO 14001 standard and familiar with the LBNL performance-based EMS. The review determines if the EMS activities conform to the requirements of the LBNL EMS program plan and if it has been properly implemented and maintained. The review may suggest corrective actions and opportunities for improvement. Additionally, the assessors may review the performance of the EMPs. The results of the internal review are discussed with the EMS Core Team, who determines what actions are necessary to address the assessment findings. In addition, the results of the internal assessment may also be presented to LBNL senior management.

#### Validation Audit

On a three-year cycle, a formal audit of the LBNL EMS program by a qualified party outside the control or scope of the environmental management system is required. A formal audit includes the following elements: 1) an audit plan that reflects the scope and schedule of the audit, 2) a review of background documents prior to the actual site visit, 3) a physical audit of the facility to determine conformance with the ISO standard, consistency between the elements of the EMS as they are implemented with the facility, and continual improvement of the EMS, 4) preparation of an audit report outlining any findings from the audit, and 5) an out briefing with senior managers from the facility conveying the findings of the audit.

A representative from the DOE Berkeley Site Office will be invited to participate as an observer on the team as the site office will be involved in declaring conformance of the EMS. The length of the audit will be approximately 5 days, including both desk and onsite reviews. The results of the validation audit will be presented to at a closeout briefing where members of LBNL senior management, the DOE Berkeley Site Office, and the EMS Core Team are expected to attend. Following the audit, the Core Team will make initial recommendations on the appropriate set of corrective actions for any findings. The final step is for the DOE Berkeley Site Office will declare that LBNL's EMS conforms to the ISO 14001 standard after any corrective action plan has been developed and approved. If the validation audit determines that there are significant weaknesses in the program, a special management review (beyond that described in Section 3.18) may be convened. As with internal assessments, all significant findings will be tracked using the Laboratory's CATS.

The internal assessment and validation audit processes are further described in EHS Procedure 275, *EMS Assessments and Audits*<sup>33</sup>.

### 3.18 MANAGEMENT REVIEW

Annually, the EMS activities are reviewed by LBNL senior leadership. At a minimum, the EMS Program Manager will meet with the EHS Division Director to discuss one or more of the following topics:

- Significant environmental impacts
- EMP progress
- Candidate projects for addressing the significant environmental impacts
- Results of EMS internal assessments and external audits
- Recommendations for continual improvement in all areas related to the EMS.

Based on this review, top management at LBNL, which includes the EHS Division Director may determine the need to make changes to the EMS program seeking continual improvement. Factors such as improved assessment methodologies, or major changes to the facility's mission, products, and processes are considered in determining the need to make changes to the program.

The management review process is further described in EHS Procedure 276, *Management Review of the EMS*<sup>34</sup>.

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## 4.0

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# Attachment A

## Summary of LBNL Performance and Action Plans Relative to DOE Goals Listed in Strategic Sustainability Performance Plan

SSPP Goal #	DOE/ SC Goal	Performance Status	Planned Actions & Contribution	Risk of Non-attainment																									
1.1	28% Scope 1 & 2 GHG reduction by FY 2020 from a FY 2008 baseline	Cumulative % reduction @ ends of: FY 2011: <b>-13.4%</b> 49,208 mt CO <sub>2</sub> e FY 2008 Baseline: 46,587mt CO <sub>2</sub> e FY 2020 Goal: 33,542 mt CO <sub>2</sub> e	Living Lab Plan: FY 2020: -80% w/o HEMSFs: 114%	H																									
1.2	30% energy intensity reduction by FY 2015 from a FY 2003 baseline	FY 2003: 188,528 BTU/GSF Baseline FY 2010: 159,261 BTU / GSF FY 2011: 189,916 BTU / GSF FY 2011 Savings: <b>-0.8%</b> from FY 2003 FY 2015: 89,460 BTU / GSF	Living Lab Plan: FY 2015: 47% FY 2020: 133% HEMSFs Excluded	H																									
1.3	Individual buildings or processes metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)	<table border="1"> <thead> <tr> <th></th> <th>FY 2011</th> <th>Current</th> <th>Plan</th> <th>by end</th> </tr> </thead> <tbody> <tr> <td>Electric:</td> <td>18</td> <td>33</td> <td>38</td> <td>FY 2012</td> </tr> <tr> <td>Natural Gas:</td> <td>2</td> <td>10</td> <td>21</td> <td>FY 2014</td> </tr> <tr> <td>Water:</td> <td>7</td> <td>9</td> <td>25</td> <td>FY 2015</td> </tr> <tr> <td>Steam:</td> <td></td> <td></td> <td></td> <td>none from others</td> </tr> </tbody> </table>		FY 2011	Current	Plan	by end	Electric:	18	33	38	FY 2012	Natural Gas:	2	10	21	FY 2014	Water:	7	9	25	FY 2015	Steam:				none from others	Electric: complete by Q3 FY 2012. FY 2015 mostly reserved for Nat Gas & Water meter punch lists	L
	FY 2011	Current	Plan	by end																									
Electric:	18	33	38	FY 2012																									
Natural Gas:	2	10	21	FY 2014																									
Water:	7	9	25	FY 2015																									
Steam:				none from others																									
1.4	Cool roofs, unless uneconomical, for roof replacements unless project already has CD-2 approval. New roofs must have thermal resistance of at least R-30	Total Cool Roof Areas Installed:  During FY 2011: 30,926 SF 22,047 SF on the Iconic LBNL Dome  Total by FY 2011 (FIMS): 519,568 SF	Specify for new building, repairs and renovations	L																									
1.5	7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter (5% FY 2010 – 2012)	FY 2011: RE from on-site generation 0.0% <u>RE from purchased RECs</u> 8.8% FY 2011 Total RE: 8.8%	Potential: 20 MW from onsite PV & buy from LLNL ~140 MW RIDGE project	L																									
1.6	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to a FY 2005 baseline	FY 2005 baseline: 14,131 GGe Increase through FY 2011: 17.0% Increase FY 2011 to FY 2010: 15.7%	All AFV fleet by end FY 2020	L																									
1.7	2% annual reduction in fleet petroleum consumption by FY 2020 relative to a FY 2005 baseline	FY 2005 baseline: 81,840 GGe FY 2010: 75,002 GGe FY 2011: 68,178 GGe -9% from FY 2010 -17% from FY 2005	Plan for no fleet petroleum use by end of FY 2020	L																									
1.8	75% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 2000 and thereafter. Starting in FY 2015 100%	FY 2011 LDVs purchased: 7 FY 2011 AFV-LDVs purchased: 6 FY 2011 AFV-LDVs purchased: <b>86%</b>	Continue acquiring AFVs: All AFV fleet by FY 2020	L																									
1.9	Reduce fleet inventory by 35% within the next 3 years relative to a FY 2005 baseline	FY 2005 Baseline: 261 vehicles FY 2011: Reduced <b>36.4%</b> 166 vehicles <b>LBNL has achieved this goal early</b>	Continue to reduce fleet as practicable; acquire more LSEVs	L																									
2.1	13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline	Cumulative % reduction at the ends of: FY 2011: <b>21% Over</b> 24,447 mt CO <sub>2</sub> e FY 2008 Baseline: 20,248 mt CO <sub>2</sub> e FY 2020: 16,968 mt CO <sub>2</sub> e	Reduce Bus. Travel with Virtual Confer. Centers lab-wide	M																									
3.1	15% of existing buildings greater than 5,000 gross square feet (GSF) are compliant with the Guiding Principles (GPs) of HPSB by FY 2015	FY 2015 Goal: 8 Bldgs; 296,997 GSF FY 2011 Met: 2 Bldgs; 126,459 GSF FY 2011 Added: 0 Bldgs; 0 GSF FY 2015 Plan: 6 Bldgs; 393,899 GSF	Including (N) Bldgs. thru FY 2015: 2 short of Bldg. Goal; GSF Goal exceeded: Renovate 2 Bldgs.	M																									

SSPP Goal #	DOE/ SC Goal	Performance Status	Planned Actions & Contribution	Risk of Non-attainment
3.2	All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the GPs and where the work exceeds \$5 million, each are LEED® – NC Gold certification or equivalent	LBNL has policies & design standards in place for new construction and major renovations: LEED-Gold® Stretch Goal for all: LEED-Platinum® LBNL also has similar policies & design standards in place to meet HPSB Guiding Principles for projects less than \$5M.	Considering increasing energy efficiency standard to 60% over ASHRAE + maximizing RE for new buildings and renovations	L
4.1	26% water intensity reduction by FY 2020 from a FY 2007 baseline	Cumulative % reduction at ends of: FY 2007 Baseline: 38.19 Gal / GSF-Yr. FY 2011: <b>18.5%</b> 31.12 Gal / GSF-Yr. FY 2015 Goal: 32.08 Gal / GSF-Yr. FY 2020 Goal: 28.26 Gal / GSF-Yr.	Detect / repair leaks; investigate CT water trtmnt.; prepare Water Management Plan FY 2020: will not meet	H
4.2	20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline	ILA (non-potable water) FY 2010 Baseline: 0.0 million Gal FY 2011 wstwr. reuse: 0.5 million Gal FY 2020 20% Savings Goal: LBNL only has wastewater reuse available	Continue seeking wastewater reuse opportunities: assume increased wastewater reuse outside of goal	L
5.1	Divert at least 50% of non-hazardous solid waste, excluding construction and demolition debris, by FY 2015	Non-hazardous solid waste (SW) diverted: FY 2010: 492 mt (50.7% of all SW) FY 2011: 542 mt (53.8% of all SW)	Expand compostable material program; improve education and signage	L
5.2	Divert at least 50% of construction and demolition materials and debris by FY 2015	Construction & demo wastes diverted: FY 2010: 1,646 mt (85% of C&D) FY 2011: 3,154 mt (77% of C&D)	Continue following Construction Guideline criteria of diverting at least 75% of C&D waste	L
6.1	Procurements meet sustainability requirements and include sustainable acquisition clause (95% each year)	All LBNL subcontracts include sustainable acquisition clauses and specify green products where applicable.	Continue working w/ end-users to ID and specify sustainable products and services in their purchases.	L
7.1	All data centers are metered to measure a monthly PUE (100% by FY 2015)	LBNL Building B50B R1275 Data Center metered for PUE during FY 2009	Wireless sensor network; with active PUE control	L
7.2	Maximum annual weighted average Power Utilization Effectiveness (PUE) of 1.4 by FY 2015	FY 2011 PUE: 1.45 LBNL is close to achieving this goal	LBNL continues to look at new technologies, which will improve PUE	L
7.3	Electronic Stewardship - 100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012	FY 2011 Performance to 3 Goals: Pwr Mgmt: policy in place & activated 95% EPEAT: 91% EPEAT Listed Disposal: Complies & 80% to Reuse	Acquisition: Plan: meet EPEAT requirements by working with suppliers	L